WHAT WE CLAIM IS:

1. A wavefront measuring apparatus for measuring a wavefront of light passing through a test optical system, said wavefront measuring apparatus comprising:

a light source;

a reference light path in which a reference member for producing reference light is disposed;

a test light path in which said test optical system is disposed; and

a plano-convex optical member disposed in said test light path in such a manner that a plane surface thereof faces toward said test optical system, said plano-convex optical member having a wall thickness approximately equal to a radius of curvature of a convex surface thereof;

wherein a space between said test optical system and said plano-convex optical member is filled with a liquid.

2. A wavefront measuring apparatus according to claim 1, wherein the following condition (1) is satisfied:

$$|n_{liq}-n_{opt}| \leqq 0.1 \qquad (1)$$

where n_{liq} denotes a refractive index of said liquid, and n_{opt} denotes a refractive index of said plano-convex optical member.

3. A wavefront measuring apparatus for measuring a wavefront of light passing through a test optical system, said wavefront measuring apparatus comprising:

a light source;

a reference light path in which a reference member for producing reference light is disposed;

a test light path in which said test optical system is disposed; and

a plano-convex optical member disposed in said test light path in such a manner that a plane surface thereof faces toward said test optical system, said plano-convex optical member having a wall thickness approximately equal to a radius of curvature of a convex surface thereof;

wherein an optical path length of said test light path and that of said reference light path are approximately equal to each other, and the following condition (2) is satisfied:

$$L<2\times n_{opt}\times d \qquad (2)$$

where: L denotes a coherence length of said light source; d denotes a wall thickness of said plano-convex optical member; and n_{opt} denotes a refractive index of said plano-convex optical member.

4. A wavefront measuring apparatus according to claim 1, wherein the following condition (3) is satisfied:

$$|n_{med}-n_{opt}|\times|r-d|\leqq 0.01\ \text{mm} \qquad (3)$$

where: n_{med} denotes a refractive index of a medium lying between said test optical system and said plano-convex optical member; n_{opt} denotes a refractive index of said plano-convex optical member; r denotes a radius of curvature of said plano-convex optical member; and d denotes a wall thickness of said plano-convex optical member.

5. A wavefront measuring apparatus according to claim 1, wherein at least the convex surface of said

plano-convex optical member is provided with a reflective coating.

6. A wavefront measuring method for measuring a wavefront of light passing through a test optical system by using a measuring optical system having a light source, a reference light path in which a reference member for producing reference light is disposed, and a test light path in which said test optical system is disposed,

wherein a plano-convex optical member is disposed in said test light path in such a manner that a plane surface thereof faces toward said test optical system, said plano-convex optical member having a wall thickness approximately equal to a radius of curvature of a convex surface thereof, and

a space between said test optical system and said plano-convex optical member is filled with a liquid.

7. A wavefront measuring method according to claim 6, wherein the following condition (1) is satisfied:

$$|n_{liq}-n_{opt}| \leqq 0.1 \qquad (1)$$

where n_{liq} denotes a refractive index of said liquid, and n_{opt} denotes a refractive index of said plano-convex optical member.

8. A wavefront measuring method for measuring a wavefront of light passing through a test optical system by using a measuring optical system having a light source, a reference light path in which a reference member for producing reference light is disposed, and a test light path in which said test optical system is disposed,

wherein a plano-convex optical member is disposed in said test light path in such a manner that a plane surface thereof faces toward said test optical system, said plano-convex optical member having a wall thickness approximately equal to a radius of curvature of a convex surface thereof,

an optical path length of said test light path and that of said reference light path are made approximately equal to each other, and

the following condition (2) is satisfied:

$$L<2\times n_{opt}\times d \qquad (2)$$

where: L denotes a coherence length of said light source; d denotes a wall thickness of said plano-convex optical member; and n_{opt} denotes a refractive index of said plano-convex optical member.

9. A wavefront measuring method according to claim 6, wherein the following condition (3) is satisfied:

$$|n_{med}-n_{opt}|\times|r-d|\leqq 0.01\ \text{mm} \qquad (3)$$

where: n_{med} denotes a refractive index of a medium lying between said test optical system and said plano-convex optical member; n_{opt} denotes a refractive index of said plano-convex optical member; r denotes a radius of curvature of said plano-convex optical member; and d denotes a wall thickness of said plano-convex optical member.

10. A wavefront measuring method according to claim 6, wherein at least the convex surface of said plano-convex optical member is provided with a reflective coating.